

AMENDMENTS TO THE DRAWINGS

Applicants submit herewith drawing replacement sheets so as to conform to 37 C.F.R. § 1.121(d) as required by the Examiner. The drawings have also been amended to correct a number of typographical errors in the previous drawings identified during the preparation of this Response. In particular, reference number "120" was used to identify two different features in the drawings. The reference number "124" was also used to identify two different features in the drawings. The drawings have been amended to correct these errors. The Examiner is requested to approve the revised drawing sheets. No new matter is being introduced by the revised drawings.

Attachments: Drawing Replacement Sheets (5 Pages)

REMARKS

This paper is submitted in response to the Office Action mailed on May 4, 2006. Claims 1-3, 5, 6, 8, and 9 have been amended, claims 10-14 have been canceled, and claims 15 and 16 have been added. Claims 1-9, 15 and 16 now remain pending in the application. In view of the foregoing amendment, as well as the following remarks, Applicants respectfully submit that this application is in complete condition for allowance and request reconsideration of the application in this regard.

In regard to amendments to the specification, a number of typographical errors were discovered during the preparation of this Response. In particular, the specification included a number of typographical errors. In addition, a number of typographical errors were identified in the drawings that required a corresponding amendment to the specification. The typographical errors have been corrected herein. No new matter is being introduced by these amendments to the specification.

The drawings were objected to for failing to comply with 37 C.F.R. § 1.121(d). Formal drawings have been submitted through this amendment in the Replacement Sheets (5 pages) attached hereto. Accordingly, Applicants respectfully request that the objection be withdrawn.

A number of typographical errors were also identified in the drawings during the preparation of this Response. The drawings have been amended to correct these errors. No new matter is being introduced by the amendments to the drawings.

Claims 1-2 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,050,997 to Mullane ("Mullane"). The Office Action asserts:

Mullane discloses a device for use in spinal fixation comprising a polyaxial bone screw (Fig. 2) that is capable of engagement into bone with an effective amount of torque (via threads, note 26 in Fig. 2), and that has a second end that is adapted for swivelable attachment to a linking member (Fig. 3, 32). Mullane further discloses a connecting member (82), and a portion that is capable of function as linear fastener. See Drawing of Fig. 14 below. The linear fastener also would fixedly engage about the linking member machined end to produce a clamping force.

(Office Action, p. 2-3). Applicants respectfully disagree.

Mullane is directed to a spinal fixation system (10) having bone-anchoring assemblies (12, 12') that are joined via connectors (52, 52', 54, 56, 58) to stabilizing rods (16, 16'). The bone-anchoring assemblies are coupled to the connectors using a toggle bolt (22). One end of the bone-anchoring assemblies is formed as a threaded end (26) and the opposed end includes a retention cavity (34, 34'). One end of the toggle bolt is formed as a ball end (40) and the opposed end is a threaded end (42). The ball end of the toggle bolt is configured to be secured within the retention cavity using a retention collet (24, 24'). The connectors include apertures (74, 84, 114, 94, 104) that receive the threaded end (42) of the toggle bolt (22). A securing nut (116) and a locking bolt (118) are used to secure the connectors to the bone-anchoring assemblies. The securing nut (116) includes internal threads that cooperate with the external threads (120) on threaded end (42) to secure the connectors to the bone-anchoring assemblies. Threaded end (42) further includes a threaded internal bore (122) that receives the threaded locking bolt (118).

As discussed in the background section of this application, one of the problems being addressed by the invention is the application of additional torque on the bone screw as components are added to the spinal fixation system. As noted above, Mullane specifically teaches securing the connectors to the bone-anchoring assemblies by the application of additional torque to the bone-anchoring assemblies. In particular, Mullane teaches using a threaded securing nut (116), which is rotated on threaded end (42) by the application of torque to the securing nut in order to secure the connector to the anchoring assembly. Mullane also teaches applying torque to the locking bolt (118) to ensure that the anchoring assemblies and connectors stay locked in place. Thus, Mullane teaches a system where torque is applied to the bone-anchoring assembly as components are added to the fixation system. As noted above, this is one of the problems being addressed by the present application.

In contrast to what is taught or suggested in Mullane, independent claim 1 specifically recites a linear fastener "whereby application of a non-rotational, linear force to said linear fastener fixedly engages said fastener about said linking member first end to produce and maintain a clamping force effective to produce a spinal fixation assembly having a fixed orientation." As noted above, Mullane does not teach or suggest the application of a non-rotational, linear force to the linear fastener, but instead teaches a rotational force on the securing nut (116) and/or locking nut (118) that applies a torque to the bone-anchoring assembly. Accordingly, Applicants submit that Mullane fails to teach or suggest the combination of elements recited in independent claim 1 and the claim is allowable.

Although not completely understood, Applicants will now address the particular interpretation asserted in annotated Fig. 14 provided in the Office Action. (See Office Action, p. 3). It appears that the Office Action is asserting that the retention collet (28') is being interpreted as the linear fastener in order to reject independent claim 1. Even assuming, for sake of argument, that the retention collet (28') could be interpreted as the linear fastener, such an interpretation would not teach or suggest the elements recited in claim 1. For instance, claim 1 specifically recites "a linear fastener constructed and arranged to provide positive compressive attachment of said connecting member and said linking member first end." Mullane, on the other hand, teaches that the retention collet secures the linking member with the bone-anchoring assembly, and not the "connecting member" as recited in claim 1. In addition, the interpretation asserted in the Office Action locates the linear fastener on the "second end" of the linking member and not on "said linking member first end" as recited in claim 1. For these reasons, Applicants respectfully submit that even with the interpretation put forth in the Office Action, Mullane does not teach or suggest the combination of elements recited in independent claim 1 and the claim is allowable.

Claims 3-4 and 6-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mullane in view of U.S. Patent No. 4,684,284 to Bradley, Jr. ("Bradley"). For the reasons provided above, Mullane fails to teach or suggest the combination of elements recited in independent claim 1, and Bradley fails to cure this deficiency. Thus, as claims 3-4 and 6-7 depend from allowable independent claim 1, and further as each of these claims recites a combination of elements not taught or

suggested by Mullane, alone or in combination with Bradley, Applicants respectfully submit that these claims are allowable as well.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mullane in view of U.S. Patent No. 4,946,458 to Harms et al. ("Harms"). For the reasons provided above, Mullane fails to teach or suggest the combination of elements recited in independent claim 1, and Harms fails to cure this deficiency. Thus, as claim 5 depends from allowable independent claim 1, and further as this claim recites a combination of elements not taught or suggested by Mullane, alone or in combination with Harms, Applicants respectfully submit that this claim is allowable as well.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mullane in view of U.S. Published Application No. 2004/0162558 to Hegde et al. ("Hegde"). For the reasons provided above, Mullane fails to teach or suggest the combination of elements recited in independent claim 1, and Hegde fails to cure this deficiency. Thus, as claim 8 depends from allowable independent claim 1, and further as this claim recites a combination of elements not taught or suggested by Mullane, alone or in combination with Hegde, Applicants respectfully submit that this claim is allowable as well.

Claims 15 and 16 have been added through this Response. For the reasons provided above for independent claim 1, Applicants respectfully submit that claim 15 recites a combination of elements not taught or suggested by Mullane, alone or in combination with the other prior art of record, and the claim is allowable. Moreover,

as claim 16 depends from allowable claim 15, Applicants respectfully submit that this claim is allowable as well.

Conclusion

In view of the foregoing response including the amendments and remarks, this application is submitted to be in complete condition for allowance and early notice to this affect is earnestly solicited. If the Examiner believes any matter requires further discussion, the Examiner is respectfully invited to telephone the undersigned attorney so that the matter may be promptly resolved.

Applicant does not believe that any fees are due in connection with this response. However, if such petition is due or any fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to deposit account 23-3000.

Respectfully submitted,
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